

WO 01/04015

PCT/CH00/00351

TWO-PART PLASTIC SNAP HINGE CLOSURE

[The present invention] ^{This} relates to a two-part hinge closure, ^{having} [consisting of] a lower part, which can be placed on a container, and ^{the lower part?} [has] a circumferential casing wall, and a cap, which can be connected with ^{the lower part?} [it] by ^{having} [means of] a movable hinge and ^{having} [has] a casing wall, wherein ^{Both} both parts are made separately of each other and can be assembled together, and ^{an} [wherein] furthermore ^{an} [in the] assembled, closed state the casing walls of both hinge parts extend flush above each other.

Description of Related Art

Hinge closures made of plastic have been on the market for approximately forty years. In the simplest forms, such hinge closures made of plastic consist of a lower part and a cap, wherein the lower part and the cap are connected as one piece by ^{means of} [a] film hinge. In most cases these are not snap hinge closures. These ^{closures} came on the market in large numbers only approximately ten years later. In the meantime the various embodiments of plastic closures with snap hinges ^{overwhelm} [have practically conquered] the entire hinge closure field.

The designs for plastic closures with snap hinges have become more and more complicated ^[these days]. The production of plastic snap hinge closures becomes more and more complex and expensive because of the additional integration of a security strip. The plastic snap hinge closures are ^a single-piece and usually are loaded from the direction of the lower part during injection molding. The entire material must be pressed from the injection

WO 01/04015

PCT/CH00/00351

location through the lower part, and thereafter via at least one film hinge into the cap, and the ^{lower part} [latter] must be loaded. If there is ^{also} a security strip [in addition], it is [also] necessary to load it with material via very thin connecting points. This leads to the cycle times for injection molding and closing of such plastic parts hardly permitting cycle times below twenty seconds, even with the most modern machinery and optimum design of the injection molds.

Also [Moreover], the respective closures injection- molded in the open state ^{have} [entail] more problems during ejection. Often the security strips, or also the spring elements which cause the snap action of the snap hinge, [already] become damaged during ejection from the injection mold.

Two-part plastic closures have also been known [for some years]. Here, the productions as two parts has different reasons, but they are always connected directly or indirectly with the hinge. For example, it ^{is} [has been long] known that the sturdiness of the hinges of single-piece snap hinge closures is relatively low and they tend to tear because of the forces which are introduced in a disadvantageous manner into the film hinges.

Accordingly, it is proposed in ^{European Patent Reference} EP-A-0 629 560 to produce the lower part and the cap of a snap hinge closure separately and to manufacture a separate hinge element, with which the two closure parts can be connected with each other, from a rubber-like plastic material.

^{U.S. Patent} [US-A] 5,381,920 also shows a similar solution, wherein a tool box made of plastic is manufactured from a separate lid and a separate lower part, wherein a pure hinge

WO 01/04015

PCT/CH00/00351

element can be inserted into appropriate receivers of both parts and [in this way] ^{thus} hingedly ^{connect} [connects] the two parts.

A single-piece plastic closure is known from ^{German Patent Reference} DE-A-195 17 102, wherein the spring element of the snap hinge is separately made. This permits the production of a closure with a spring force of the closure specified by the customer, wherein it is simultaneously possible to work with a considerably simpler injection mold permitting higher cycling times.

True two-part closures [corresponding to the preamble of claim 1] are known from ^{German Patent Reference} DE-A-37 03 193, as well as ^{European Patent Reference} EP-A-0 583 204. In both cases these are not snap hinge closures, but only hinge closures. [The reasons for making these] ^{These} closures ^{are made} in two pieces [are to be mainly seen in that] ^{because} they are relatively large closures, which are intended for long-term use. Accordingly it is desirable, for example, that such closures can also be disassembled again for cleaning, in order to be able to reassemble them later in [their] ^a clean state for continued use.

9. this SUMMARY OF THE INVENTION

In this regard [the present] ^{of} invention has a completely different object. Longevity is [here] ^{real} no [longer of] interest, but [instead essentially] ^{rather} the cheapest possible production. [In the course of this] ^{Thus} it is [particularly] intended to prevent large amounts of plastic material from having to flow over thin places, for example film hinges.

This object is attained [by the] ^{with a} two-part design of [the] ^a hinge closure having [the] characteristics [of claim 1]. ^{described in this specification and in the claims}

WO 01/04015

PCT/CH00/00351

[Thanks to] ^{with} the two-part design, the amount of plastic per closure part is reduced to approximately half that of a single-piece closure. [This means that with] ^{Thus} plastic parts ^{are} simplified and reduced [in this way] ^{and} it is possible to operate with much shorter cycle times. In particular, cycle times between four and eight seconds are possible. [Moreover, thanks to] ^{Also, with} the smaller parts it is possible to arrange [practically] ^{nearly} twice as many cavities per injection mold. The relatively simple and small plastic parts make it also possible to operate with so-called tier tools without any special ^{cost} outlay, which multiply the capacity as a function of the number of tiers. This means that with the same plastic injection molding machine it is practically possible to produce approximately three to ten times more two-part plastic hinge closures than single-piece snap hinge closures with the customary technology. Although such a manufacture demands an additional assembly machine, it is known from analogous uses that the capacity of such assembly machines is enormously great [so that] ^{Thus,} it is possible to easily process the production capacity from two plastic injection molding machines with one assembly machine and with the technology represented here.

In addition to the purely economic advantages, a plastic closure produced in two parts offers [still] further advantages. The lower part and the upper part can [of course] be designed in different colors without problems. Furthermore, the cap and the lower part can also be manufactured from different plastic materials. [In this way] ^{Thus} it is possible in particular to produce a hinge closure wherein the lower part can be made from PET. It is [therefore]

WO 01/04015

PCT/CH00/00351

possible to offer a snap hinge closure for PET containers which is also gas-tight. ^{It is} [Up to now
[it had not been] possible to produce plastic snap hinge closures from PET, for reasons of
process technology.

The present trend of continuously falling prices for plastic snap hinge closures practically does not permit the production of individual tools for small runs. On the other hand, customers desire the highest possible degree of customizing. These two requirements are completely opposed. However, ^{with this} [thanks to the present invention] this problem can be easily solved. The lower part and the cap can be practically combined in the manner of a construction kit. Thus it is possible to produce lower parts of the same diameter and different knurling, and it is possible without ^{a large cost} [enormous] outlay to inject company marks by ^[means of] using interchangeable inserts into the molds for the caps. ^{Also,} [Added to this are] the already mentioned different color variations, which can be combined with each other in unlimited ways.

^{With} [Thanks to] the geometric arrangement of the snap hinge at one of the two closure parts and their special design, it is possible for the injection molds to have the required simplicity, and the corresponding simple assembly can also ^{occur} [take place].

^{This} [The present invention] also discloses two preferred methods for assembling two embodiments in accordance with ^{this} [the invention] of the subject of the invention. ^[are determined]

Further advantageous embodiments of the subject of ^{this} [the invention] ^[are determined] [ensue] from the dependent claims and are explained in the following description.

WO 01/04015

PCT/CH00/00351

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of ^{this} the subject of the invention are represented ^{by way of example} in the assembled and unassembled states in the attached drawings, wherein:

Fig. 1 shows ^{a lateral view of} a lower closure part in ^{an} the unassembled state, in a lateral view in the direction toward the hinge area, while;

Fig. 2 ^{shows a lateral view of} represents a matching cap with a security strip, also in ^{an} the unassembled state in the same view. In;

Fig. 3 ^{shows a lateral view of} the two closure parts in Figs. 1 and 2 are represented in the ^{an} assembled state, wherein the viewing ^{viewed in a} direction is the same as ^{with} the previously represented individual closure parts.;

Fig. 4 shows ^{top} a view from above on ^{of} the lower closure part ^{shown} in Fig. 1, again in the unassembled state and;

Fig. 5 shows ^{a bottom view of} the upper closure part, or the cap, ^{shown} in Fig. 2 in a plan view from below.;

Fig. 6 shows the lower part of a second closure ^{variation}, wherein ^a the spring element and the coupling element are arranged in one piece on ^a the lower part, the same as a security strip.;

Fig. 7 shows ^{a lateral view of} the matching cap, in the same ^{direction} lateral view as the lower part in Fig. 6, and;

Fig. 8 shows the closure with the two closure parts ^{shown} in Figs. 6 and 7 ^{but} in ^{the} assembled state ^{an} [In];

Fig. 9 ^{shows} the lower part ^{shown} in Fig. 6 ^{but} is represented in a lateral view and rotated by 90°, wherein the spring element and the coupling element are shown ^{practically} pivoted downward by 180°, which corresponds to ^a the manufacturing position [];

Fig. 10 ^{shows} represents a center vertical section ^{taken} through an assembled two-part closure on an enlarged scale [];

Fig. 11 ^{shows} represents a diametrical vertical section ^{taken} through a further embodiment of a cap, and [];

Fig. 12 ^{shows a similar} the same section ^{taken} through a lower part matching the cap ^{shown} in Fig. 1 [];

Fig. 13 ^{an} shows the assembled closure ^{with} consisting of the lower part and the cap in Figs. 11 and 12 in a front view, and in []; and

Fig. 14 ^{shows} in a rear view ^{of the assembled closure as shown in Fig. 13} [];

DESCRIPTION OF PREFERRED EMBODIMENTS

The closure in accordance with ^{this} the invention ^{has} consists of two individual parts which are separately produced. These are ^{on the one hand} the lower part 1 and ^{on the other hand} the upper part or cap 2. Only in the assembled state do these two closure parts 1, 2 result in the complete closure 3, as ^{shown} represented in Figs. 3, 8, 13 and 14. For ^{this} the invention ^{here disclosed}, the presence of casing walls on the lower part 1, as well as on the cap 2, is ^{absolutely} necessary in order to obtain a closure which is simple to assemble, has no

WO 01/04015

PCT/CH00/00351

protruding elements and also meets ^{a problem} [problematical] for [the] entire handling during assembly, as well as for packaging the containers with the corresponding closures. ^{Also,} [Added to this is that] protruding or strongly snapping elements can practically be produced only with appropriate gate valves which ^{on the one hand,} make the tools complex and increase the cycling times. Accordingly, only the security strips of the closures in accordance with ^{this} [the] invention slightly protrude ^{with} [in] respect to the casing walls.

It is generally necessary for all embodiments that the casing walls of both closure parts ^{1 and 2} be arranged so that they are flush above each other in the assembled state, however, this does not necessarily require that the casing walls extend vertically. It is sufficient ^{for} [that] the casing walls of both parts ^{to be} [are only] flush with each other ^{only} [in the hinge area], in the assembled state. This is not required in the remaining areas, ^{and thus there is} [so that] complete freedom of design ^[is maintained]. In contrast to plastic closures produced in one piece, it is possible without problems ^{using} [by means of] the technology in accordance with ^{this} [the] invention to design closures which as a whole have a conical shape. A further general characteristic of the two-part closures in accordance with ^{this} [the] invention ^{is} [lies in] that for all practical purposes the basic arrangement of the parts ^{forming} [constituting] the hinge can be arranged in an arbitrarily interchanged manner. This means that with practically the same embodiment the respective spring elements, or the at least one spring element and the at least one coupling element, can be

arranged either in the lower part 1 or on the cap 2, and correspondingly the receivers which are engaged by the parts of the coupling element can be attached to the respectively other closure part. [Of course, the ^{The concept} same also applies to the placement of the security strip.

Accordingly, one closure element and another closure element are often mentioned in the following description in order to [make the ^{clarify} interchangeability of the terms ^{the} lower part and ^{the} cap clear].

A first embodiment is represented in Figs. 1 to 5. The lower closure part ⁱⁿ Fig. 1 has a cylindrical casing wall 10. The lower part 1 [of course] has fastening means with ^{The fastening means} which the lower part 1 can be fastened on a container. [These] are [completely] conventional [means such as], for example, a screw thread arranged on the inner wall of the cylindrical casing wall 10, or [also] fastening cams or fastening beads, depending on whether it is intended to screw or press the lower part 1 on a container.

On the top, the lower part 1 is closed off by a cover surface 11, in which a pouring opening or, as in this case ^{a conventional manner,} a pouring spout 12, is arranged. In [the customary way] the pouring spout ^{has} [is equipped with] a circumferential sealing or holding bead 13. [Moreover, ^{Recesses} recesses] 14 ^{are shown of} [can be seen] in the lateral view [in] Fig. 1, which permit the movable spring elements to be [left] free. These cutouts are inwardly offset toward the center in relation to the outer surface of the casing wall 10. The recesses 14 can be offset so far toward the interior that openings are created, which communicate with the interior space of the lower part 1 or,

WO 01/04015

PCT/CH00/00351

as represented here, are ^{is shown,} still closed off by the casing wall. A cam 15 placed on the cover surface 11 ^{can furthermore be seen} which ^{in the course of} during the closing process of the assembled closure is used as a stop for the cap edge and ^{thus} therefore makes a main hinge between the lower part 1 and the cap 2 superfluous.

^{The} [A] cap 2 matching the lower part ^{1, as} in Fig. 1, is shown in Fig. 2. In this embodiment a security strip 4 ^{is} has been applied by injection molding to the cap 2. The cap 2 has a cover surface 21, which is ^{shown, the} adjoined by a circumferential casing wall 20. In the example here represented this casing wall 20 extends vertically ^{with} in respect to the cover surface 21. However, as already mentioned, the casing wall ²⁰ could also extend inclined ^{with} in respect to the cover surface 21, so that the entire cap ² has a conical shape. ^{This} [Of course this] would require a corresponding shape of the lower part 1 and its casing walls 10. The security strip 4 is arranged on the lower edge 22 of the cap 2 via strips 41 which act as predetermined breaking points. Slits 23 can be seen, which are oriented upward from the lower cap edge and leave the spring elements 24 free, which are connected in one piece with the cap 2. The transition of the spring elements 24 to the casing wall 20 ^{occurs} takes place via film hinges or thin places 25, which here extend obliquely. On their lower end, the two spring elements 24 are connected with each other via a bridge-like coupling element 27. The transition from the coupling element 27 to the two spring elements 24 can also ^{occur} take place via film hinges 26.

WO 01/04015

PCT/CH00/00351

Actually, the spring elements 24 are merely parts which transmit tensile forces, wherein the tensile forces result in an elastic bending deformation of adjoining areas of the casing walls 10, 20.

It can be practical for later assembly to extend the coupling element 27 exactly as far downward over the lower cap edge 22 as the lower edge of the security strip 4, so that a circumferential support surface is created for all practical purposes, which is particularly advantageous for [later] handling. Such components do not [get hung] ^{hang} up in assembly devices with shaker conveyors, in particular. Two different fastening means are represented on the coupling element 27, which can be used alternatively or together. For one, a hook-shaped, outwardly directed sharp-edged bead 28 is shown on the lower edge, which can act together with a corresponding groove on the inside of the casing wall 10 of the lower part 1. [Then again, ^{Also} windows 29 are represented, which can be engaged interlockingly and/or in a frictionally connected manner by cams on the inside of the casing wall 10 of the lower part 1.

A casing wall area 35 which is [left] free remains between the two spring elements 24 and acts together with the cam 15 on the lower part 1. This casing wall area 35, which is [left] free, acts as ^{an} [a] one-armed spring lever, which rests against the [mentioned] cam 15. In the completely open state, these two elements are not in engagement with each other,

WO 01/04015

PCT/CH00/00351

[instead, they] ^{but rather} only [come into] contact [with] each other during closing and then provide a corresponding restoring force, such as is customary with snap hinges.

As [can be clearly seen] ^{shown} in Fig. 3, such a two-part closure provides an esthetically perfect solution which hardly shows that this is not a single-piece closure.

[As already mentioned,] Fig. 4 shows the lower [closure] part ¹ in a ^{top} view [from above]. [Here the] ^{The} cover surface 11 with the pouring spout 12 arranged in the center [can be] is clearly seen. This view is used in particular to show the arrangements of the cutouts, or openings, into which the coupling element 27, or the spring elements 24, can be pushed. In a radially outward extending direction from the spout 12 arranged in a centered manner, it is possible to first distinguish the cam 15, which is used as a stop for the cap edge during the opening, [or closing,] operation, after which an elongated receiving slit 16 [can be] is distinguished, which is arranged further outward and extends concentrically in relation to the outer wall. [This] ^{The} receiving slit ¹⁶ extends through the cover surface 11 and can also be arranged to extend as a depression partially in the inner wall of the lower part 1. The receiving slit 16 communicates with the two laterally arranged recesses 14, in which the spring elements 24, in this case two strap retainers, come to rest in the assembled state. The required free mobility of the spring elements 24 is provided [thanks to] ^{by} the adaptation of the shape of [these] ^{the} recesses 14. The casing wall 10 of the lower part 1 remains standing between the two recesses 14.

WO 01/04015

PCT/CH00/00351

Fig. 5 shows a ^{bottom} [plan] view of the cap 2 [from below]. A sealing plug 33 is arranged centered in the cover surface 21 of the cap 2, which can extend sealingly around the pouring spout 12. The security strip 4 extends around the casing wall 20, offset radially outward from ^{the casing wall 20} it. The connection between the casing wall 20 and the security strip 4 is provided via webs 41. In this view, the coupling element 27 appears to be like a thinned wall area. The normal wall thickness shows the center area 35, which ^{forms} [constitutes] the casing wall area ^{as} [left] free. [Here, too, the ^{The} cap ² again [makes a transition] ^{transitions} into full wall strength at the end of the spring elements, of course, the ^{The} outer casing wall line is only shown in dashed lines for clarity in order to show the differences in wall thickness between the casing wall ²⁰ on the one hand ^{between} and the spring elements 24 and the coupling element 26 on the other hand.]

A second variation of the two-part plastic closure [in accordance with the] of this invention is represented in Figs. 6 to 9. [Here, too, the ^{The} lower part ^{is} has been identified by 1, ^{element reference numeral} the cap by 2 and the entire closure by 3. The reference numeral 4 ^{element} has again been selected for the security strip, and 41 also means the connecting webs 41 here, with which the security strip is fastened, in this case on the lower part 1.

The lower part 1 in Fig. 6 [here again] has a circular- cylindrical casing wall 10. A vertically raised material strip 100 extends flush with this outer surface of the casing wall and comprises a snap hinge 103 having a center area 124, which has a function corresponding to the spring element 24 in the previous embodiment. Here, the transition of

WO 01/04015

PCT/CH00/00351

this spring element 124 to the lower part 1, or to the casing wall 10 of the [latter] ^{lower part 1} [takes place] ^{occurs by} via a film hinge 125 extending in an arc. A diametrically opposed film hinge 126 ^{forms a} [constitutes] the line of separation between the spring element 124 and the coupling element 127 [following it]. Both film hinges 125 and 126 are shown in dashed lines, [since] ^{because} they can hardly be seen in this view. A solution similar to the one represented in the first [exemplary] embodiment ^{can} [could] also be used with such a design of the spring element, or the coupling element 124, 127. It ^{is} [would be] possible [here, too] to provide the cap 2 with a receiving slit, into which the coupling element 127 ^{can} [could] be pushed and wherein a correspondingly shaped recess in the casing wall ^{is} [would have to be] provided, which would correspond to the course of the upper film hinge 126.

But a completely different solution is shown here. Fig. 7 shows a cap 2, ^{where the} [whose] casing wall 20 has a recess 120, ^{the} [this] which extends over practically the entire height. In its size, the [this] recess 120 corresponds to the material strip 100, so that in the assembled state the material strip 100 can cover the recess 120 exactly in an interlocking manner. On the underside of the cover surface 121 of the cap 2, four support ribs 122, which ^{can} have additional interlocking means 123, are formed directly bordering the opening 120. These support ribs 123 are used for receiving two corresponding support ribs 128 between each other in an interlocking or frictionally connected manner.

WO 01/04015

PCT/CH00/00351

The assembled entire closure 3 ^{is shown} can be seen in Fig. 8. This closure [also hardly differs from] ^{is somewhat similar to} a conventional single-piece closure. Only the separating lines between the material strip 100 of the casing wall 20 in the cap 2 extend further upward which, for all practical purposes, cannot be detected by a layman. In connection with this embodiment [variation] and in contrast to plastic closures produced in one piece, the security strip can also extend not only by approximately 180° around the closure, but for all practical purposes entirely around it, with only a cutout in the area of the hinge.

The lower part 1 is [again] represented in a lateral view, but rotated by 90° ^{embodiment} [in] with respect to Fig. 6. In contrast to the previously represented solution, with this [variation] the spring element and the coupling element 124, 127 would not be injected in the vertically extending position as shown in Fig. 6, but in a position as ^{shown} [represented] in Fig. 9. [For one, this] This provides greater ^{design} [freedom of design] and also makes it possible to form the support ribs 128 without [the necessity of having] gate valves in the mold.

In the second embodiment in accordance with Figs. 6 to 9, no pouring spout ^{is shown} can be seen. However, ^{the pouring spout} it can be provided the same as in the previously mentioned embodiment. Accordingly, a corresponding sealing plug can also be provided in the cap 2. However, to include these elements in the drawing would clutter it ^{up} too much without offering any additional information. [But these] ^{, but the} elements [will] ^{can} be provided [in spite of this]. This in particular, because these elements play a corresponding part during assembly.

Although the two parts of the closure are individually produced and ~~now~~ must be assembled, in comparison to known plastic closures of similar construction they are considerably cheaper ~~[on account]~~^{because} of the enormously increased productivity when manufacturing the individual parts. As ~~[already]~~^{previously} mentioned ~~[at the outset]~~, this productivity is the result of the selected shape and the design of the snap hinge closure from two parts.

A solution for a two-part closure 3 which ~~[has been]~~^{is} optimized ~~[in]~~^{with} respect to production techniques, is represented in Fig. 10 in detail in a centered vertical section. Here, ~~[the]~~ at least one spring element 24 ~~[has been]~~^{is} attached, running in the extension of the casing wall 20 of the cap 2, by ~~[means of]~~ at least one film hinge 25. But ~~[in this case]~~ the coupling element 27 ~~[has been]~~^{is} designed ~~[in such a way]~~^{so} that it ~~[constitutes]~~^{forms} at least one part of the casing wall 10 of the lower part 1 and ~~[thanks to]~~^{with} a centering lip 18 for exact positioning, can be ~~[put]~~^{assembled} flush ~~[together with it]~~.

Moreover, a rib, which is oriented approximately radially outward, is provided ~~[there]~~ as a pressing element 19 in the interior chamber of the lower element 1. ~~[This]~~^{The} pressing element 19 works together with a retaining projection 19', which extends through at least one window 29 on the coupling element 27. The pressing element 19 makes it impossible to pull the retaining projections 19' out of the window 29, ~~[so that]~~^{to provide} a frictionally connected and interlocking connection between the lower part 1 and the cap 2 ~~[is assured]~~.

WO 01/04015

PCT/CH00/00351

A recessed grip 17 ^{is} [has been] formed in the casing wall 10 of the lower part 10 opposite the hinge.

A further preferred embodiment ^{of this invention} is represented in Figs. 11 to 14. This embodiment results in a particularly compact solution [] which is [also particularly] unproblematic in regard to assembly, because the two parts can be plugged vertically together in any arbitrary angle position. This results in a particularly cost-effective assembly, because an appropriate alignment is not necessary and the individual parts have ^{asymmetrically} no [asymmetrically] projecting parts which could lead to a hang-up ^{when manufacturing}.

The cap by itself is represented in Fig. 11 in a diametrical vertical section. The cap has a cylindrical casing wall 20 with a spring element 204 designed as a snap hinge. This snap hinge [204] has a film hinge 201 ^{forms} which [constitutes] the articulated connection between the spring element 204 and the casing wall 20 of the cap or upper part 2, and a second ^{forms} lower film hinge 202 which [constitutes] the articulated connection between the spring element 204 and the coupling element 207 adjoining it on the bottom. Accordingly, the snap hinge 200 ^{formed} is [constituted] by the elements 201, 202 and 204. The snap hinge 200 is bordered in the radial direction by slits 203. The coupling element 270 has a closed ring-shaped form and is connected directly flush under the casing wall 20 with the latter. Here, the coupling element 270 is formed on the [said] casing wall 20 not only by means of the snap hinge 200, but also [additionally] by a tear seam 217. The tear seam 217 extends from the one lateral border of

WO 01/04015

PCT/CH00/00351

the snap hinge, extending around it, to the other lateral border 203 of the snap hinge 200 and terminates in the respective slits 203. After cutting the tear seam 217, the coupling element 270 is only connected with the casing wall 20 of the upper part 2 by the spring element 204, the same as in the previously described solutions. The tear seam²¹⁷ can be embodied as a continuous thin place or, as known in technology, as a predetermined separating place by [means of]^{using} appropriate webs. In the form represented here, the tear seam 271 is represented as a continuous thin place. The lower edge of the casing wall 20 is formed by a pressure bead 205, which projects in an outward direction peripherally circulating. At the first use, the pressure by the user on the pressure bead 205 leads to the severing of the tear seam 271. Two inward projecting retaining beads 206 designed with sharp edges are formed on the inner surface of the circumferential coupling element 270, which are used for the interlocking connection with the embodiment of the lower part 1 represented in Fig. 12. Here, too, the cap 2 [is provided with]^{has} a sealing plug 33, which has a circumferential sealing bead 34.

In this embodiment the lower part 1 also has a circumferential casing wall 10 [whose]^{with an} upper area 210 [has been] offset toward the interior by approximately the casing wall thickness. Ring-shaped circumferential retaining notches [have been]^{are} formed on the exterior surface of [this]^{the} area 21', into which the retaining beads 206 snap in an interlocking manner, in the assembled state of the closure. A security strip 400 [has here been]^{is} formed on the shoulder 212 formed in the transition area of the casing wall 10 to the inwardly offset upper

WO 01/04015

PCT/CH00/00351

area 210. ^{The} [Here, too, the] attachment can be embodied as a tear seam 401 or as a predetermined breaking point by ^{using} [means of] appropriate bridges, which can be cut. The upper edge of the security strip 400 is formed, projecting toward the interior, as a retaining lip 402. ^{The} [This] retaining lip 402 is located above the cover surface 21, through which a spout 12 extends ^[here, too]. In the closed state, the sealing bead 34 of the previously described sealing plug 33 comes to rest sealingly in the mouth area of the pouring spout 12. An annular wall 16 on the underside of the cover surface 11 is used as a seal against the bottle neck on which the closure is to be placed. A screw thread or, as represented here, a number of holding nubs 17, can be ^{used} [provided] for fastening on the container neck.

The closure 3 is represented assembled in Figs. 13 and 14. The actual connection between the lower part 1 and the cap, or upper part 2, is practically not visible, because this area is completely covered by the security strip 400. The tongue 403 of the security strip 400 is visible in Fig. 13, while in the position in accordance with Fig. 14, rotated by 180°, the security strip 400 extends continuously. The retaining lip 402 on the security strip 400 covers the pressure bead 205, which ^[therefore] is not visible. Only a short section of the pressure bead 205 ^{is shown} [can be seen] in the separation area of the tongue 403. The embodiment represented here has many advantages. In regard to production technology and assembly technology it is the version which can be produced best and assembled best. ^{[Added}

WO 01/04015

PCT/CH00/00351

Also, there feature
to this is a double security, because it is necessary prior to the first opening to remove the
security strip 400 first, and [thereafter also] ^{then} [to [the]] sever the tear seam 271.